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Dan Harkay notes

ACTION MEMORANDUM – RV4

DATE:

and Ceiling Increase

SUBJECT: Request for a Removal Action at the Cornell-Dubilier Electronics Site, South Plainfield, Middlesex County, New Jersey

FROM: James Kearns, On-Scene Coordinator
Removal Action Branch

TO: ~~Alan J.~~ George Pavlou, Acting Director
~~Allen Steinberg~~
~~Regional Administrator~~ Emergency & Remedial Response Division

THRU: ~~George Pavlou, Director~~ Joseph D Rotola, Chief
~~Emergency and Remedial Response Division~~ Removal Action Branch

Site ID #: GZ

I. PURPOSE

The purpose of this and Ceiling Increase Action Memorandum is to request and document approval of the proposed removal action described herein for the Cornell-Dubilier Electronics Site (Site), located at 333 Hamilton Boulevard, Middlesex County, New Jersey 07080.

On August 20, 2007, the U.S. Environmental Protection Agency Removal Action Branch (RAB) received a written request from the New Jersey Remediation Branch (NJRB) to conduct a removal action at the Site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, (CERCLA), 42 U.S.C. §9601 et. seq.,. The request was as a result of finding capacitors in the Bound Brook Stream corridor located adjacent to the southeast boundary of the site. A copy of the NJRB request is included in Appendix I.

This is the fourth removal action by the EPA at the site. The previous Action Memoranda dated September 23, 1998, August 15, 2001 and June 28, 2004 are included as Appendix II.

CONCURRENCES
NAME: Cornell-Dubilier Electronics INIT: sb Date 07/25/08 Filename:CD#000

Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB	ORC-NYCRFB	OGC		ERRD-DD	ERRD-D	
Surname	Kearns	Harkay	Rotola			BASSO	McCabe	Pavlou	
Date									

This removal action addresses ~~the~~ erosion of the banks of the Bound Brook, migration of capacitors, and ~~containment of exposed~~ capacitor parts and ~~suspected~~ PCB ~~oil-laden~~ CONTAMINATED wood blocks in the ~~area bordering the~~ wetlands ~~that are~~ area located in the southeastern portion of the site.

Conditions at the site meet the criteria for a removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as documented in Section 300.415(b)(2) of the National Contingency Plan (NCP). The Site is on the National Priority List (NPL). There are no nationally significant or precedent setting issues associated with this removal action.

This Action Memorandum requests the authorization of $400,000 in Direct Extramural Funds, of which $350,000 is from the Regional Removal Advice of Allowance for mitigation contracting. If approved, the total Direct Extramural project ceiling would be increased to $825,000, of which $XXX would be for mitigation contracting. Conditions at the Site continue to meet the criteria for a removal action under the Comprehensive Environmental Response, Compensation and Liabilty Act of 1980, as amended ("CERCLA"), and documented in Section 300.415(b)(2) of the National Contingency Plan ("NCP").

II. SITE CONDITIONS AND BACKGROUND

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the site is NJD981557879.

A. Site Description

1. Removal Site Evaluation (RSE)

Prior to 1936, Spicer Manufacturing Corp., a predecessor to Dana Corporation, owned and operated the facility, and many of the buildings were from this era. Spicer Manufacturing Corp. ceased operations in South Plainfield in 1929 and, beginning in 1936, leased the property to Cornell-Dubilier Electronics, Inc. (CDE). CDE operated at the facility from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process, and the company apparently disposed of PCB-contaminated materials and other hazardous substances directly on the facility ~~soils~~. CDE's activities ~~evidently~~ led to widespread chemical contamination at the facility, as well as migration of contaminants to areas nearby the facility. PCBs have been detected in the groundwater, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in the surface water and sediments of the Bound Brook. High levels of volatile organic compounds (VOCs) have been found in the facility soils and in groundwater. Since CDE's departure from the facility in 1962, it has been operated as a rental property, with over 100 commercial and industrial companies operating at the facility as tenants. Some of these tenants may have contributed to some Site

contamination, but the PCB and VOC contamination appears to be primarily attributable to CDE's operation.

In 1996, the New Jersey Department of Environmental Protection (NJDEP) conducted a Site Inspection and collected surface soil, surface water, and sediment samples at the facility property. In June 1996, at the request of NJDEP, EPA collected and analyzed additional soil, surface water and sediments at the facility. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganics were present at the Site.

As a result of the contamination found at the facility, in March 1997, EPA ordered the owner of the facility property, D.S.C. of Newark Enterprises, Inc., a potentially responsible party (PRP), to perform a removal action to mitigate risks associated with contaminated soil and surface water runoff from the facility. The removal action included paving driveways and parking areas in the industrial park, installing a security fence, and implementing drainage controls.

In August through December 1997, RAB collected surface and subsurface soil samples from the banks and sediment samples from the streambed of the Bound Brook. Nine sections (Reach 1 through 9), spanning approximately 2.4 miles of the Bound Brook, were investigated. Soil samples were collected from both sides of the stream, five feet and ten feet away from the ~~edge of the stream~~ WATERS, from two depth intervals, 0 to 6 inches and 18 to 24 inches. Sediment samples were collected from the creek at similar depths. These samples were collected in transects every 50 feet in Reaches 1 through 4, every 100 to 200 feet in Reach 5, every 200 feet in Reaches 6 through 8, and every 50 feet in Reach 9. Table 1 presents the maximum total PCB concentrations detected for the samples collected from each Reach on both sides of the Bound Brook and from its sediments.

Table 1: Maximum PCB Concentrations (mg/kg) Detected in Samples Collected From the Bound Brook, EPA, 1997

	North Bank	South Bank	Sediment
Reach 1	6.7	85	0.32
Reach 2	8.1	27	22
Reach 3	39	830	21
Reach 4	4.6	250	1.6
Reach 5	180	110	39
Reach 6	470	220	13.6
Reach 7	28	24	25
Reach 8	15	7.1	22
Reach 9	0.2	0.17	0.12

In 1997 the EPA Environmental Response Team (ERT) performed an ecological evaluation of the Bound Brook. These investigations identified elevated levels of PCBs in fish and sediments

of the Bound Brook. Maximum PCB concentrations (Aroclor-1254) identified in crayfish, forage fish, and edible fish was 2.4 mg/kg, 20 mg/kg, and 42 mg/kg, respectively. As a result of these investigations, NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake.

Also in 1997, EPA began collecting surface soil and interior dust samples from residential and commercial properties near the CDE facility. The results of the sampling revealed PCBs in soil and interior dust that posed a potential health concern for residents of several of the properties tested. These investigations led to cleanups at 19 residential properties, conducted from 1998 to 2000. In July 1998, EPA included the Site on the National Priorities List.

In June 1999, soil sampling activities were performed by RAB to characterize PCB contamination in the floodplain of the Bound Brook in Reaches 5 and 6, which had the highest mean surface soil PCB concentrations of the areas investigated in 1997. The areas chosen for this investigation were selected based on their proximity to high use areas. The highest concentration of PCBs (Aroclor-1254) detected was 25 mg/kg.

In 2000, EPA initiated the Remedial Investigation (RI) for the Site and began collecting soil samples from properties further from the CDE facility. This sampling revealed additional properties with PCBs in soil at ~~unacceptable~~ elevated levels, and indicated a need for more extensive sampling. EPA compiled the 1997 and 1998 removal sampling data with its remedial investigation data in a Remedial Investigation Report for Operable Unit 1. In September 2003, EPA selected a remedy to address the contaminated soil at properties in the vicinity of the former CDE facility. The remedy included indoor dust remediation where PCB-contaminated dust was encountered.

More recently, all buildings have been vacated of tenants and demolished as part of an EPA Remedial Action (Operable Unit 2). This action, which was completed in May 2008, resulted in the removal of approximately 26,400 tons of contaminated building debris. The area formerly covered by the buildings has been paved temporarily. Excavation and backfilling of the former capacitor disposal area was completed in June 2008. Approximately 21,000 tons of capacitor debris and soil were removed as part of the Remedial Action. All of the waste was shipped offsite for disposal.

Since 2007 periodic inspections have been conducted along the Bound Brook near the Site. Capacitor and capacitor parts discovered during these inspections have been collected and secured in drums at the Site for future disposal. These capacitors, most of which are relatively small in size, have extremely ~~elevated~~ HIGH ~~levels~~ CONCENTRATIONS of PCBs ~~within them~~.

In December 2007 through January 2008, RAB recreated a portion of the sampling event that took place in the Bound Brook corridor in 1997. During this effort, ~~only~~ Reaches 1 through 4 were sampled; an area that spans from approximately the upstream wetland bound by Spicer Avenue through to Lakeview Avenue. The analytical results indicate that Reaches 2 and 3

contained the most elevated PCB levels in the vicinity of the Site. Reach 2 spans the area between the twin culverts in the southeast corner of the Site to the first culvert under the Conrail tracks. Reach 3 covers the next downstream area up to the second culvert under the Conrail tracks.

The maximum PCB concentrations, identified as Aroclor-1254, detected in Reach 2 were 180 mg/kg on both the north and south banks, and 190 mg/kg in the sediments. The areas of highest concentrations in Reach 2 were just downstream of the twin culverts and in the vicinity of a former discharge pipe from the Site. The maximum PCB concentrations, identified as Aroclor-1254, detected in Reach 3 were 650 mg/kg in the north bank, 500 mg/kg in the south bank, and 62 mg/kg in the sediment. Most of the transects in Reach 3 contained ~~points~~ with PCB detections above 100 mg/kg. some locations

Capacitors, many containing PCBs, were dumped in large numbers at the site, ~~and capacitor debris has been found in the Bound Brook since the site was first identified.~~ ~~Recent~~ Erosion of a portion of the stream bank near the industrial park, ~~may~~ have ~~led to a spike in the amount of~~ capacitor debris in the Brook. appears to caused due to flooding events do infiltrate.

Following the observance of capacitors in the Bound Brook in May 2007 EPA has performed ~~monitoring~~ periodic inspections of the Bound Brook ~~drainage area~~ in the area of the twin culverts on a weekly basis to ~~determine the presence~~ identify and ~~impact that PCB contaminated~~ capacitors ~~are posing on the Bound Brook~~. Remove EPA's ~~Periodic~~ inspections of the Bound Brook ~~adjacent to the former CDE facility~~ have identified ~~an occasional~~ capacitors in this area at the twin culverts have ~~These capacitors are believed to have been displaced due to erosion~~. In December 2007, EPA collected additional sediment samples in the Bound Brook adjacent to the former CDE facility. Results indicate that PCB concentrations have increased in some areas of the Bound Brook. EPA's observations of ~~occasional~~ capacitors ~~on the~~ banks of the Brook and ~~review of recent sediment analytical data~~ warrants ~~further~~ action by EPA.

~~Based on the available information,~~ a CERCLA removal action is warranted at the Site to address the potential threats posed by the continued presence and release of capacitors containing elevated ~~level~~s of PCBs ~~in or near the~~ Bound Brook ~~corridor adjacent to the Site~~. in the wetland area

2. Physical Location

concentration from the boundary of the immediate vicinity of the twin culverts & upstream wetlands

The Site is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. It occupies approximately 26 acres in an industrial/commercial/residential area and is bordered by commercial businesses and residences to the south, west, and northwest. Wetlands and an unnamed tributary to the Bound Brook border the Site to the southeast and east. Conrail railroad tracks pass alongside the eastern edge of the Site and crisscross the unnamed tributary just north of the Site. Other industries and commercial businesses are present to the northeast and east of the Site on the opposite side of the Conrail tracks. A Site Map is included as

Attachment 1. An estimated 540 persons reside within 0.25 miles of the Site, with the nearest residential homes being located on Spicer Avenue and on the opposite side of Hamilton Boulevard, less than 200 feet from the Site. The total population estimated to live within one mile of the Site is 8,700 persons.

The unnamed tributary flows into the Bound Brook approximately 0.75 miles downstream of the Site. The Bound Brook flows for 1.5 miles before emptying into New Market Pond. Surface water flow from New Market Pond travels approximately 8.5 miles before discharging into the Raritan River. The dam on the western edge of New Market Pond is reportedly impassible to most fish. Spring Lake is located upstream from the Site and is associated with Cedar Brook. Both of these water bodies support secondary contact recreation including boating and fishing. All of the above-mentioned water bodies are designated by the State of New Jersey for the maintenance, migration, and propagation of the natural and established biota. These water bodies are utilized as freshwater fisheries. A fish consumption advisory has been posted for the area between the Site and New Market Pond. Wetlands that border the Site to the southeast diminish significantly as the Bound Brook heads downstream towards the northwest. The width of the stream in the vicinity of the Site varies from 10 to 20 feet, with a varying depth during normal conditions, of one to four feet. Ground water is a significant source of drinking water within a four-mile radius of the Site. The majority of people within this radius are served by drinking water from either the Middlesex Water Company (MWC) or the Elizabethtown Water Company (EWC), both of which utilize supply wells within four miles of the Site.

3. Site Characteristics

Prior to 1936, Spicer Manufacturing Corp., a predecessor to Dana Corporation, owned and operated the facility, and many of the buildings date from this era. Spicer Manufacturing Corp. ceased operations in South Plainfield in 1929 and, beginning in 1936, leased the property to CDE. CDE operated at the facility from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process, and the company ~~apparently~~ disposed of PCB-contaminated materials and other hazardous substances directly on the facility ~~soils~~. In addition, it is reported that Cornell-Dubilier Electronics, Inc. (CDE) tested transformer oils for an unknown period of time until they vacated the Site. CDE's activities ~~evidently~~ led to widespread chemical contamination at the facility, as well as migration of contaminants to areas nearby the facility. PCBs have been detected in the groundwater, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in the surface water and sediments of the Bound Brook. High levels of volatile organic compounds (VOCs) have been found in the facility soils and in groundwater. Following CDE's departure from the facility in 1962, it was operated as a rental property, with over 100 commercial and industrial companies operating at the facility as tenants. Some of these tenants may have contributed to some Site contamination, but the PCB and VOC contamination appears to be primarily attributable to CDE's operation. The owner of the property is DSC Enterprises of Newark, Inc.

In 1996, NJDEP conducted a Site Inspection and collected surface soil, surface water, and sediment samples at the facility property. In June 1996, at the request of NJDEP, EPA collected and analyzed additional soil, surface water and sediments at the facility. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganics were present at the Site.

As a result of the contamination found at the facility, in March 1997, EPA ordered the owner of the facility property, D.S.C. of Newark Enterprises, Inc. (DSC), a potentially responsible party (PRP), to perform a removal action to mitigate risks associated with contaminated soil and surface water runoff from the facility. The removal action included paving driveways and parking areas in the industrial park, installing a security fence, and implementing drainage controls.

In 1997, EPA conducted a preliminary investigation of the Bound Brook to evaluate the potential impacts of contamination on human health and the environment. Elevated levels of PCBs were found in fish and sediments of the Bound Brook. As a result of these investigations, NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries, including nearby New Market Pond and Spring Lake.

In 1997, EPA began collecting surface soil and interior dust samples from residential and commercial properties near the CDE facility. The results of the sampling revealed PCBs in soil and interior dust that posed a potential health concern for residents of several of the properties tested. These investigations led to removal actions at 15 residential properties, conducted from 1998 to 2000. In July 1998, EPA included the Site on the NPL.

The investigations of the contaminated groundwater and the sediments of the Bound Brook are ongoing. In January 2008, EPA installed 8 additional groundwater monitoring wells in the vicinity of the former CDE facility. Initial sampling revealed elevated levels of TCE in the groundwater.

In May 2008, EPA completed the demolition of the 18 contaminated buildings at the former CDE facility. The buildings were contaminated with PCBs and metals such as arsenic, chromium, mercury, and lead. Approximately, 26,400 tons of building debris was transported off-site to approved landfills via truck.

In June 2008, EPA completed excavating approximately 21,000 tons of capacitor debris and soils from an area in the central undeveloped portion of the facility, identified as the main capacitor disposal area. The debris in this area was contaminated with PCBs. This excavation activity encompassed only a portion of the known disposal area.

Capacitors, many containing PCBs, were dumped in large numbers at the site, and capacitor debris has been found at the perimeter of the facility and at offsite locations. Specifically,

capacitors have recently been collected fairly regularly in the bound brook. Recent erosion of a portion of the stream bank near the industrial park may have led to a spike in the amount of capacitor debris in the Brook.

Following the observance of capacitors in the Bound Brook in May 2007 EPA has performed monitoring of the Bound Brook drainage area on a weekly basis to determine the presence and impact that PCB contaminated capacitors are posing on the Bound Brook. Periodic inspections of the Bound Brook adjacent to the former CDE facility have identified an occasional capacitor. These capacitors are believed to have been displaced due to erosion in the area of the three culverts that support the railway that had historically provided rail access to the CDE facility and the tongue area located between the culverts. A review of an historical areal photo dated October 20, 1947 indicates this area included fill material from the CDE facility. In addition, a review of areal photos from May 7, 1963 (photo collected during construction of 2 additional culverts, total of 3) when compared to an areal photo Collected on March 9, 1991 indicated significant erosion of the tongue area between initial culvert and two new culverts installed in 1963 had occurred. It is believed that this erosion continues today, persistently exposing additional capacitors and capacitor parts.

In December 2007, EPA collected additional sediment samples in the Bound Brook adjacent to the former CDE facility. Results indicate that PCB concentrations have increased in some areas of the Bound Brook. EPA's observations of occasional capacitors on the banks of the Brook, a review of recent sediment analytical data, and review of historical areal photos warrants further action by EPA.

This planned Removal Action is the fourth EPA Fund lead Removal action for the Site. There have also been four (4) Responsible Party removals for the site (2 ongoing and 2 completed).

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant.

To investigate the potential source areas and determine the extent of soil contamination for the facility property a Remedial Investigation (RI) was performed. As part of the RI surface soil samples (i.e., 0 to 2 feet below ground surface) and subsurface soil samples (i.e., greater than 2 feet below ground surface) were collected. During the RI, 96 surface soil samples and 59 subsurface soil samples were collected, including samples collected from test pits excavated within the central portion of the property. The following hazardous materials and/or substances have been identified at the Site:

Substances Identified	Statutory Source for Designation as a Hazardous Substance
Furan	RCRA 3001
2,3,7,8-TCDD (dioxin)	CWA 307(a)
3,3',4,4'-tetrachlorobiphenyl (dioxin congener)	

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trichloroethene (TCE)	CWA 311(b) (4), CWA 307(a), & RCRA 3001
polycyclic aromatic hydrocarbons (PAHs)	
polychlorinated biphenyls (PCBs)	CWA 311(b) (4), & CWA 307(a)
Aldrin	CWA 311(b) (4), & CWA 307(a), & RCRA 3001
Dieldrin	CWA 311(b) (4), CWA 307(a), & RCRA 3001
4,4'-DDE	CWA 307(a)
Arsenic	CWA 307(a), & CAA 112
Lead	CWA 307(a)
1,2-DCE	CWA 311(b) (4), & CWA 307(a)
1,1-DCE	CWA 311(b) (4), CWA 307(a), & RCRA 3001
Tetrachloroethene (PCE)	CWA 307(a), & RCRA 3001
Trichloroethylene TCE	CWA 311(b) (4), CWA 307(a), & RCRA 3001
Vinyl Chloride	CWA 307(a), RCRA 3001, & CAA 112
methylene chloride	CWA 307(a), & RCRA 3001,
1,2,4-trichlorobenzene	CWA 307(a)
and 1,2-dichloropropane	CWA 311(b) (4), CWA 307(a), & RCRA 3001

In the statutory sources cited above, CWA 307(a) indicates that the source is Section 307 (a) of the Clean Water Act, CWA 311(b)(4) indicates that the source is Section 311(b)(4) of the Clean Water Act, and RCRA 3001 indicates that the source is Section 3001 of RCRA.

PCBs

PCBs are the most prevalent contaminants found on the property, and are present as a result of former CDE facility activities. Surface and subsurface soil sample analytical results indicated the presence of PCB compounds in almost all of the samples collected. Four individual Aroclors (-1242, -1248, -1254, and -1260) were detected at the property. Surface soil sampling revealed PCB concentrations at a maximum concentration of 51,000 ppm. Of the 96 surface soil samples collected during the RI, 46 samples had concentrations of PCBs greater than 10 ppm and 15 samples had concentrations greater than 500 ppm. Subsurface soil sampling revealed PCB concentrations at a maximum concentration of 130,000 ppm. Of the 59 subsurface soil samples collected during the RI, 16 samples had concentrations of PCBs greater than 10 ppm and 8 samples had concentrations of PCBs greater than 500 ppm.

Brook Only Area

As Reported in the 2003 ROD, test pit excavations unearthed capacitors that appeared corroded and/or partially burned. In addition, during excavation of test pits, white and blue crystalline powder, electrical components, and other materials were unearthed. Based on the observed presence of capacitors in the test pits and interpretation of the geophysical survey, it is estimated that the surface area of buried capacitor debris is approximately 51,100 square feet.

PCB Congeners

Because of the high concentrations of PCBs present in the soils in the southeastern portion of the Site, a limited number of surface and subsurface soil samples underwent PCB congener analysis. There are 209 congeners of PCBs. Individual congeners can have a toxicity similar to dioxin

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and, if present in sufficient concentrations, can pose a risk higher than the PCB congeners that lack the chemical properties of dioxin. This analysis revealed 3,3',4,4'-tetrachlorobiphenyl, a dioxin-like congener, at a maximum concentration of 2,200 ppm.

Dioxins/Furans

Due to the presence of charred debris in the test pits and the fact that burning PCBs can result in the generation of dioxins and dibenzofurans, a highly toxic group of contaminants, a limited set of soil samples were subjected to dioxin and furan analysis. Although analyzed in only a few surface and subsurface soil samples, dioxins and furans were detected during the Operable Unit 2 Remedial Investigation soils investigation.

Individual dioxin/furan constituents ranged up to 13.5 parts per billion (ppb). The maximum concentrations for the dioxin/furan homologs (i.e., compounds with an equal number of chlorine substitutions) was 52.8 ppb.

- 2,3,7,8-TCDD (dioxin) was detected at a maximum concentration of 8 ppb.

Volatile Organic Compounds

Elevated concentrations (i.e., up to ppm levels) of chlorinated VOCs in both the subsurface soil and the perched water within and/or immediately adjacent to areas with elevated concentrations of PCB constituents in the soils have likely contributed to the leaching and solubilization of the PCB constituents through co-solvency effects.

- Surface soil sampling revealed trichloroethene (TCE) contamination at a maximum concentration of 47 ppm. Subsurface soil sampling revealed TCE contamination at a maximum concentration of 33 ppm at a depth of three feet.

- Elevated levels of cis-1,2-DCE; trans-1,2-DCE; 1,1-DCE; tetrachloroethene (PCE); TCE; vinyl chloride; methylene chloride; 1,2,4-trichlorobenzene; and 1,2-dichloropropane were also detected in soils.

Semi-Volatile Organic Compounds (SVOCs)

- Elevated concentrations of SVOCs, mainly polycyclic aromatic hydrocarbons (PAHs) (up to 1,554 ppm total PAHs), were detected in soils.

Pesticide Compounds

- Nineteen pesticides were detected across the facility property.
- Aldrin, dieldrin, and 4,4'-DDE were detected at maximum concentrations of 1,100 ppm, 520 ppm, and 1,200 ppm, respectively.

Inorganic Compounds

Elevated concentrations of 23 different metals were detected across the facility property.

- Arsenic and lead were detected at maximum concentrations of 1,060 ppm and 52,600 ppm, respectively.

These hazardous substances are acutely and chronically toxic, carcinogenic and flammable. The potential health effects from some of these compounds are irritant, dermal and eye effects, respiratory and central nervous system, irritation of the stomach and intestines, decreased production of red and white blood cells, declined resistance to infections, confusion, nausea, difficulty in speaking and walking, unconsciousness, miscarriages and subtle abortions, brain damage, declined fertility of men through sperm damage, diminished learning abilities of children, behavioral disruptions of children, such as aggression, and impulsive behavior and hyperactivity.

The mechanism for past releases to the environment was dust from the contaminated surface soils, direct contact from trespassers, surface water runoff, and erosion from PCB/capacitor laden soils from the banks of the Bound Brook.

The environmental effects posed by these materials include potential airborne release and the potential for migration of contamination in the surface water and groundwater. Numerous events could trigger releases; the primary concerns include, destabilization of the banks of the Bound Brook banks erosion, migration of soils/PCB oil laden wood blocks/and PCB contaminated paper film used in capacitors from flooding in the wetlands area, and direct contact via stream access.

5. NPL status

The Site ~~is currently listed~~ on the National Priority List (NPL). ~~It was listed~~ in July 1998.

6. Maps, pictures, and other graphic representations

Attachment 1, presents the general location and layout of the Site.

B. Other Actions to Date

1. Previous action

a. Details of Previous Removal Activities

There have been three previous removal actions for the CDE site. The previous Action Memoranda dated September 23, 1998, August 15, 2001 and June 28, 2004 are included as Appendix II. Details of each removal action are ~~included~~ below;

1) September 23, 1998 Action Memorandum-
   - Documented verbal authorization from the Director of ERRD on August 5, 1997 of $10,000 for the fabrication and installation of signs warning anglers not to eat fish taken from waters of the Bound Brook.
   - Documented verbal authorization from the Director of ERRD on March 26, 1998 an additional $150,000 to remove and dispose of PCB contaminated dust from the interiors of 7 homes located near the site.
   - Requested ceiling increase and exemption from the 12-month statutory limitation to allow removal activities to continue. Also requested an increase in the ceiling of $265,000 to increase the ceiling to a total of $425,000. Ceiling increase request was for cleaning of interiors of 8 additional homes where PCBs in interior dust pose a potential health concern.

2) August 15, 2001 Action Memorandum- requested a re-start and exemption from the 12-month statutory limitation to allow removal activities to continue. This action involved the removal and disposal of contaminated soil from the residential property located at 126 Spicer Avenue and restoration of the property to pre-removal conditions. The estimated cost of the work was $119,403 of which $72,806 was for mitigation contracting. Costs associated with this action were not expected to exceed the costs ($425,000 total ceiling) previously authorized in the Action Memorandum for the site dated September 23, 1998 and therefore no ceiling increase was requested.

3) June 28, 2004 Action Memorandum- requested a change in scope, a ceiling increase and 12-month exemption. The action involved the removal and disposal of contaminated soil from the residential property located at 126 Spicer Avenue in South Plainfield and restoration of the property to condition similar to those prior to the removal action. The estimated cost of the work was $203,118 of which $148,121 is for mitigation contracting. The new mitigation contracting ceiling was $394,622 and the total project ceiling was $460,100.

b. Chronology of Events for Previous Site Activities

On September 11, 1986 NJDEP conducted a Site Inspection and collected three surface soil, two surface water, and two sediment samples at the facility property. Exact sample locations are not available. Several metals, volatile organic compounds (VOCs), and Aroclor-1254 were detected in the soil and sediment samples. Information on the investigation event is presented in the Site Inspection Report, dated 12 September 1986, and the Data Validation Review Memorandum, dated 13 April 1987.

In June 1994, at the request of the New Jersey Department of Environmental Protection (NJDEP), EPA collected six surface soil, four sediment, and four surface water samples from the

facility property during a SIP sampling event. Results of the sampling are summarized in the Site Inspection Prioritization Evaluation Report, dated 23 January 1995 (EPA, 1995). VOCs, semi-volatile organic compounds (SVOCs), Aroclor-1254, and various metals were detected in soils at concentrations significantly exceeding background levels. Aroclor-1254, TCE, 1,2-dichloroethene (1,2-DCE), and lead were detected in a sediment sample from Bound Brook near the rear of the property. In addition, elevated concentrations of polycyclic aromatic hydrocarbons (PAHs, a class of SVOCs), Aroclor-1254, lead and zinc were present in the sediment collected near the outfall pipe. Aroclor-1254, Aroclor-1248, 1,2-DCE, and various metals were also detected at elevated concentrations in surface water samples from Bound Brook.

On October 13, 1994, EPA collected two additional sediment samples from Bound Brook to obtain appropriate background concentrations to compare to the SIP sampling event results (EPA, 1995). These background samples contained total PCB concentrations of 0.7 milligrams per kilogram (mg/kg) and 0.35 mg/kg.

On February 29, 1996, EPA collected four additional surface soil samples (and a duplicate sample) and four additional sediment samples from the facility property and Bound Brook, respectively. Aroclor-1254 was detected at concentrations up to 77 mg/kg in the soils and up to 520 mg/kg in the sediments, as described in the Hazard Ranking System Documentation Report, dated December 1996 (EPA, 1996a). During this Hazard Ranking System (HRS) sampling event, it was noted that the tanks were no longer present on the edge of the northeast embankment.

On June 11, 1996, EPA completed a Screening Level Ecological Risk Assessment (EPA, 1996b), which included a comparison of surface water and sediment contaminant levels to available screening values. The risk assessment indicated that contamination of stream sediments adjacent to, and apparently associated with, the site was present at levels that have been linked to adverse impacts in benthic organisms in other freshwater systems.

On June 27 and 29, 1996, EPA collected surface and subsurface soil samples from the facility roadway, the vacant open field area, a foot/bicycle path that crossed the property, and the southeastern and eastern floodplain areas. Two depth intervals were sampled, 0 to 3 inches and 3 to 12 inches below ground surface (bgs) (3 to 18 inches bgs for the roadway only). Aroclor-1254 was detected in on-site surface soils at concentrations as high as 51,000 mg/kg from the field area and at 100 mg/kg in a sample from the floodplain of Bound Brook. Concentrations of Aroclor-1254 ranged up to 5,000 mg/kg in the surface soils along the foot/bicycle path. Lead concentrations ranging from 1,740 mg/kg to 66,600 mg/kg were measured in surface soil samples collected near the foot/bicycle path and the northeast corner of the fenced area, within the area where exposed waste materials were located. Aroclor1254 was present in the soils at the surface and beneath the gravel/stone layer of the roadway, up to 340 mg/kg and 22,000 mg/kg, respectively. Lead was detected on the surface of the facility roadway at concentrations as high as 340 mg/kg, and beneath the gravel/stone layer at concentrations as high as 7,460 mg/kg. In addition, EPA collected one sediment sample for total organic carbon (TOC, at 840 mg/kg) and grain size analyses.

On March 25, 1997 a unilateral administrative order was issued to the current owner of the Hamilton Industrial Park, D.S.C. of Newark Enterprises Inc., which required that a removal action be taken to stabilize the property. The scope of work included paving facility driveways and parking areas, installing security fencing and warning signs to limit access to the property, and installing silt fencing to limit off-site migration of surface soils.

On April 7, 1997 - EPA installed temporary fencing and posted warning signs at both ends of the footpath that crossed the eastern portion of the facility property to block pedestrian access. In addition, EPA personnel overpacked several large capacitors that were leaking oil.

On June 16 through 20 and 27, 1997, EPA initiated a study to determine the impacts of contamination of Bound Brook to human health and the environment. Soil, sediment, water, and biota (fish, crayfish, and small mammals) samples were collected along Bound Brook adjacent to and downgradient of the Site. Samples of edible fish were collected from Bound Brook, New Market Pond, and Spring Lake for use in assessing human health risks. Results of the sampling are presented in the *Bound Brook Sampling and Edible Fish Tissue Data Report*, dated August 1997 (EPA, 1997a).

On August 7, 1997 EPA collected additional soil, sediment, surface water, and biota samples along the Bound Brook adjacent to and downstream of the facility. Aroclor-1254 concentrations as high as 13 mg/kg (wet weight) and 6.2 mg/kg (wet weight) were measured in the sediment and floodplain soils, respectively. Copper, zinc, lead, and barium were detected in the soils and sediments, at concentrations up to 210 mg/kg, 620 mg/kg, 540 mg/kg, and 380 mg/kg (dry weight), respectively. The fish fillet samples contained detections of two PCBs and seven pesticides. Data collected during this sampling event, in conjunction with the June 1997 concentrations, were utilized to conduct an ecological risk assessment.

On August 8, 1997 - NJDEP issued an interim fish consumption advisory for Bound Brook and New Market Pond due to EPA findings of elevated PCB concentrations in sediments and fish samples (NJDEP, 1997).

From August 1997 through November 1997, EPA conducted sampling along the Bound Brook floodplain, collecting surface and subsurface soils from the banks and sediments from the streambed. As described in the *Soil and Sediment Sampling and Analysis Summary Report* (8 September 1998), one hundred transects were established along approximately 2.4 miles of the brook, with transects located upstream, midstream, and downstream of the site (Weston, 1998a). Four of the transects were located downstream of the New Market Pond spillway. Mean total PCB concentrations were 7.59 mg/kg for the surface soils; 11.97 mg/kg for the subsurface soils; 2.93 mg/kg for the surface sediments; and 2.34 mg/kg for the subsurface sediments.

In October and November 1997, EPA collected soil and indoor dust samples from residential properties on Spicer Avenue, near the facility property. EPA and the Agency for Toxic Substances and Disease Registry (ATSDR) reviewed the data obtained from this sampling and concluded that exposure to PCBs in dust and soil posed a potential health concern for residents at

several of the properties tested. To limit the potential for exposure to PCBs until a final remedy could be selected, EPA initiated another removal action to clean the interiors of seven homes on Spicer Avenue, Garibaldi Avenue, and Hamilton Boulevard. EPA performed interior cleaning on seven properties, and entered into an administrative order on consent (AOC) with DSC and CDE for removal of contaminated soil from six properties.

On March 29, 1998, EPA initiated a removal action to clean the interiors of homes where PCBs were found in indoor dust at levels of potential health concern, i.e., above the risk range used in the Superfund Program.

On August 6, 1998, Cornell-Dubilier and D.S.C. of Newark Enterprises, Inc. entered into an Administrative Consent Order for a removal action that included the removal and disposal of contaminated soil from five residential properties, and delineation of the vertical and horizontal extent of PCB contamination at one additional property

On August 8, 1998, NJDEP issued a final fish consumption advisory. The advisory included all parts of the Bound Brook and its tributaries, New Market Pond and Spring Lake (NJDEP, 1998).

On November 21, 1998, EPA resampled soils at the following Bound Brook transect locations: CCSD1 (Transect CC), DDSS1 (Transect DD), HHSD1 (Transect HH), PPPND2 (Transect PPP), and UUUSD1 (Transect UUU). One surface soil sample and four subsurface soil samples were collected and analyzed for PCBs, as described in the Soil and Sediment Sampling and Analysis Summary Report, Addendum No. 1, dated 3 March 1999. Results indicated Aroclor-1254 at detected concentrations ranging from 1.2 mg/kg to 580 mg/kg. These results revised the mean total PCB concentrations for surface (from 7.59 to 6.88 mg/kg) and subsurface (from 11.97 to 12.28 mg/kg) soils.

On February 23, 1999, EPA ordered the former owners, Cornell-Dubilier and Dana Corporation, to conduct a removal action at seven additional residential properties.

On April 28, 1999, A Participate and Cooperate Order was issued to D.S.C. of Newark Enterprises, Inc. and Federal Pacific Electric Company for the remediation of Tier II residential properties.

From June 21 through 23, 1999, additional samples from the Bound Brook floodplain, downstream of Spring Lake, were collected by EPA and analyzed for PCBs. Four areas were sampled: Area 1 (Veteran's Memorial Park), Area 2 (north side of Cedar Brook, between Lowden and Oakmoor Avenues), Area 3 (north side of Bound Brook, in the vicinity of Fred Allen Drive), and Area 4 (located adjacent to stream 14-14-2-3 as identified on the Flood Insurance Map for the Township of Piscataway, south of New Market Avenue and east of Highland Avenue). The investigation results are presented in the *Floodplain Soil/Sediment Sampling and Analysis Summary Report*, dated January 2000. Area 1 samples had total PCB concentrations ranging from non-detect to 25 mg/kg, Area 2 samples had total PCB concentrations ranging from 0.060 mg/kg to 2.0 mg/kg, Area 3 samples had total PCB concentrations ranging from 2.5 mg/kg to 7.5 mg/kg, and Area 4 samples had total PCB

concentrations ranging from non-detect to 0.21 mg/kg.

Because of contamination found on residential properties in 1997, in 1998, EPA expanded its investigation to Delmore Avenue and Hamilton Boulevard near the industrial park. Again, EPA determined that PCBs found in dust and soil posed a potential health concern for residents. EPA cleaned the interiors of eight homes on Delmore Avenue and Hamilton Boulevard, and entered into an AOC with CDE and Dana Corporation (Dana), another PRP, for removal of contaminated soil from seven properties. These removal actions were completed in January 2000, further limiting the potential for exposure until a final remedy could be selected.

On April 14, 2000 EPA ordered D.S.C. of Newark Enterprises, Inc. to conduct a removal action of contaminated soils at a property on Spicer Avenue. D.S.C. agreed to perform the work required under the AOC, but subsequently failed to do so. In August 2004, EPA began the removal of PCB-contaminated soil from this property, and the work was substantially completed in September 2004.

In 2000, EPA initiated the Remedial Investigation (RI) for the Site and began collecting soil samples from properties further from the CDE facility. This sampling revealed additional properties with PCBs in soil at unacceptable levels, and indicated a need for more extensive sampling. EPA compiled the 1997 and 1998 removal sampling data with its remedial investigation data in a Remedial Investigation Report for OU1, and in June 2003 proposed a comprehensive remedy for OU1, the contaminated properties in the vicinity of the former CDE facility. In September 2003, EPA selected a remedy to address the contaminated soil at properties in the vicinity of the former CDE facility. A projected 2,100 cubic yards of contaminated soil will be excavated from those properties requiring soil cleanup. The remedy includes indoor dust remediation where PCB-contaminated dust is encountered. Additional sampling is planned for properties where right-of-way sampling revealed elevated levels of PCBs, to determine if remediation is required. The sampling will include exterior soils and the collection of dust samples from the interiors of homes.

In December 2007, EPA collected additional sediment samples in the Bound Brook adjacent to the former CDE facility. Results indicate that PCB concentrations have increased in some areas of the Bound Brook. EPA's observations of occasional capacitors on the banks of the Brook and review of recent sediment analytical data warrants further action by EPA.

In January 2008, EPA installed 8 additional groundwater monitoring wells in the vicinity of the former CDE facility. Initial sampling revealed elevated levels of TCE in the groundwater.

In May 2008, EPA completed the demolition of the 18 contaminated buildings at the former CDE facility. The buildings were contaminated with polychlorinated biphenyls (PCBs) and metals, such as arsenic, chromium, mercury, and lead. Approximately, 26,400 tons of building debris was transported off-site to approved landfills via truck.

In June 2008, EPA completed excavating approximately 21,000 tons of capacitor debris and soils

from an area in the undeveloped portion of the facility, identified as the capacitor disposal area. The debris in this area was contaminated with PCBs.

2. Current Actions

Periodic inspections of the Bound Brook adjacent to the former CDE facility have identified an occasional capacitor. These capacitors are believed to have been displaced due to erosion. A review of historical areal photos indicates there has been significant erosion of the banks of the Bound Brook directly downstream of the culverts (total of 3 culverts located adjacent to one another) located at the southeastern boundary of the site. A review of historical aerial photos also indicates that initially there was 1 culvert and during the time period of CDE operations 2 additional culverts were installed immediately west of the existing culvert. The backfill used during the construction of these additional culverts appears to have been obtained from the landfilling activities that contained capacitors and capacitor parts that occurred during CDE operations.

On May 14, 2008, in an effort to identify the soil types along the banks of the Bound Brook and wetlands areas bordering the site to the southeast and south, respectively, and to confirm locations of landfill material containing capacitors/capacitor debris, the U.S. EPA Removal Action Branch with the assistance of the U.S.EPA Remedial Action Branch, performed 8 test pits. Results of the test pit activities revealed capacitors at Test Pit 2 (near culverts of the bound Brook in Reach 1). In addition, test pits 6 and 7 located adjacent to the wetlands area to the south of the site contained plastic foil/film used in microcapacitors and microcapacitor parts. Wood blocks used as flooring at the facility were also observed in test pit 7. A report documenting the results of the test pit activities was generated by Weston Solutions, Inc. [U.S. EPA Removal Support Team (RST)] and dated June 9, 2008. A copy of the report is included as Appendix IV.

On July 8, 2008, a visual inspection of Reach 1 of the Bound Brook and the Wetlands Area was performed by EPA RAB and RST. Capacitor parts were located in Reach 1 in the area of the culverts beneath the railway overpass and in the south and southeast banks of site that borders the wetlands area. A Copy of the report and a Map depicting the locations where capacitor debris was identified is included as Appendix V.

A review of historical areal photos indicates ?
During the next 3 to 4 months, EPA will re-evaluate an ecological risk assessment that was conducted in 1997-1998 for the Bound Brook corridor adjacent to the CDE site. This assessment will focus on the collection of tissue samples from fin fish to determine the presence and concentration of PCBs.

EPA Remedial Branch is in the process of completing the remedial design to address the remaining contaminated soils at the industrial park. Pursuant to the September 2004 Record of Decision- Operational Unit 3 (OU3), these soils will be excavated and treated on-site by low

temperature thermal desorption (LTTD). The remedial design provides specifications that must be sustained throughout the construction activities. The remedial design for this portion of the cleanup is anticipated to be completed within the next several months.

However, remediation investigation activities for the Bound Brook banks and sediments, and wetlands area located to the south of the site are not included in the scope of work for the LTTD activities. According to the Remedial Project Manager for the Site, the investigation activities for the Bound Brook banks and sediments, and remediation of the wetlands area is tentatively planned to be initiated in 2-3 years.

Therefore, armoring of the stream banks and wetlands is required as an interim measure to prevent further erosion of the Bound Brook and securing of the capacitor waste to prevent human contact and further migration.

C. State and Local Authorities' Role

1. State and local actions to date

There have been no State or local action taken at the site. The New Jersey Department of Health and Human Services (NJDHSS) is providing health consultations to the EPA through the Agency of Toxic Substances and Disease Registry (ATSDR). Based on the results of EPA's sampling, the NJDEP issued a fish consumption advisory for the Bound Brook and its tributaries including Newmarket Pond and Spring Lake.

2. Potential for continued State/local response

It is anticipated that the NJDHSS will continue to provide technical assistance to the EPA concerning health issues at the Site. At this time, it is not known whether there will be any other future or local actions taken at the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Hazardous substances, pollutants or contaminants present at the Site represent a threat to the public health and welfare as defined by Section 300.415(b)(2) of the National Contingency Plan (NCP), in that there is a high potential for releases to continue to occur due to erosion of the unnamed tributary in the area of the twin culverts. Factors that supported conducting the removal action at the Site include:

A. Threats to Public Health or Welfare

Conditions at the Site meet the requirements of Section 300.415(b) of the National Contingency Plan (NCP) for the undertaking of a CERCLA removal action. Factors from the NCP Section